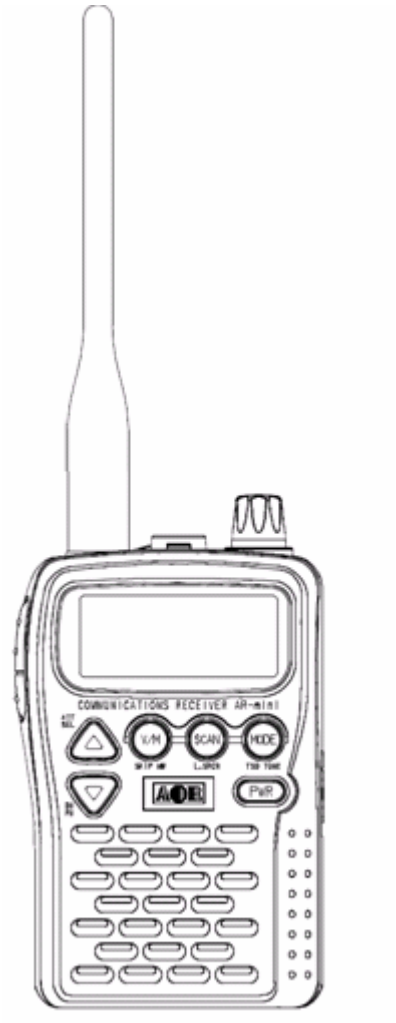
AOR®

AR-Mini

WIDE RANGE COMMUNICATIONS RECEIVER
100 KHz – 1300MHz



OPEREAING MANUAL

FOR SAFETY

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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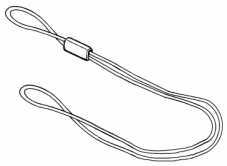
INTRODUCTIONS

Packing List

When you unpack the carton box,
could you check the following items are
provided in the carton box.
If you will find a missing item, please
contact your dealer.

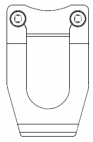
●Receiver AR-mini

●Hand Strap

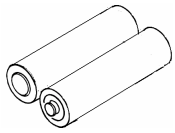


●Antenna

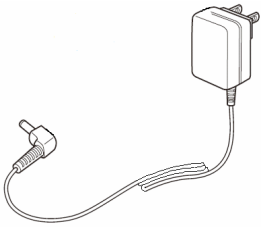
●Belt Clip (hook)



● NI-MH Battery



●AC adaptor



INTRODUCTIONS

About AR-mini

AR-mini can receive the 0.1 MHz to 1299.995 MHz of AM, FM and Wide FM bands. AR-mini is designed for simply operating by five keys.

About AR-mini's Mode

AR-mini has the following modes: VFO Mode: In this mode, you can change the frequency and band to receive the desired broadcast. This mode is basically mode for AR-mini

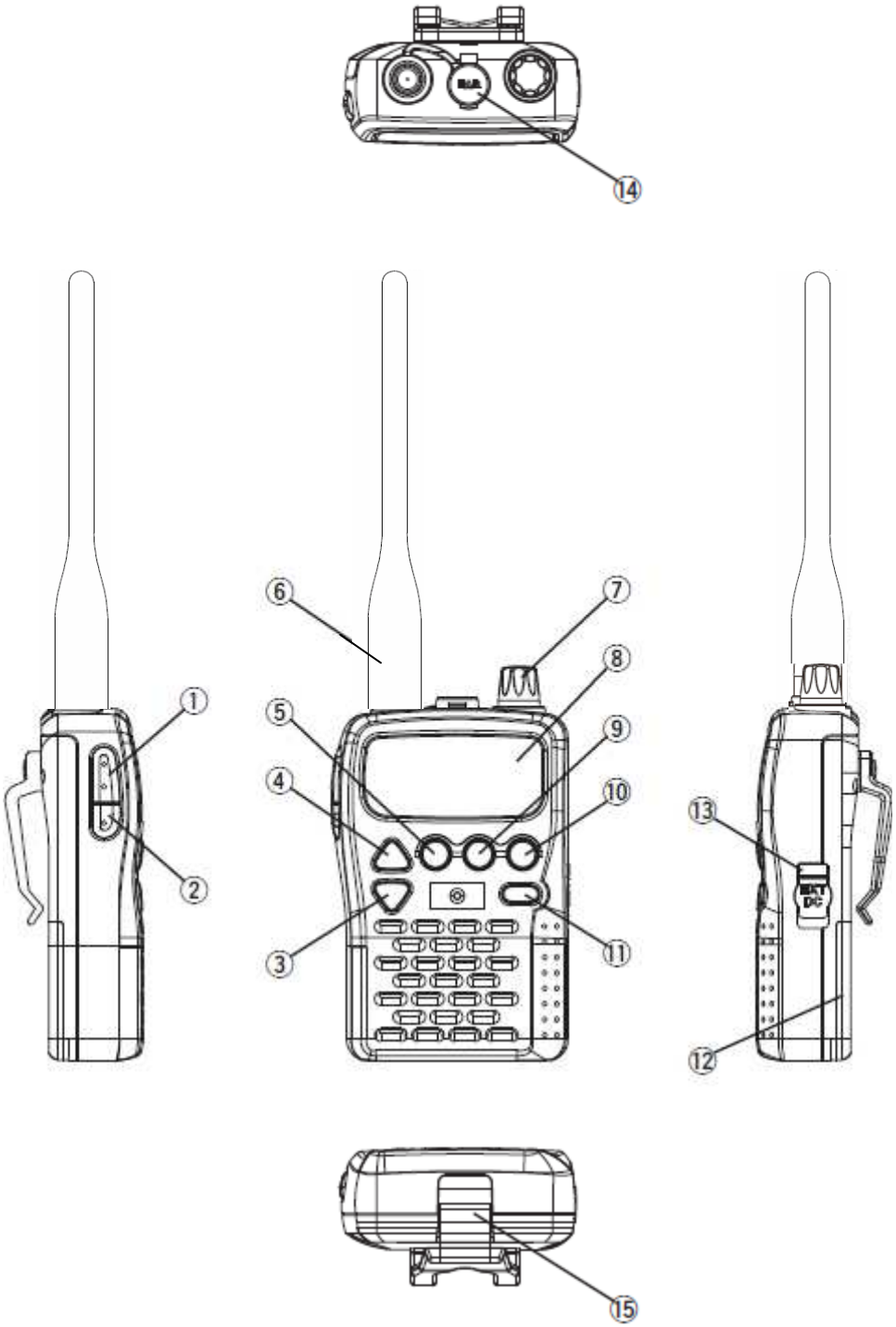
Preset Mode: In this mode, some frequencies and bands are memorized previously as the preset channels. You can receive the desired broadcast, recall the preset channel.

Memory Mode: In this mode, you can memorize the frequently frequencies and bands up to 1000 channels. Each 100 memories are controlled as one memory bank.

Setting Mode: In this mode, you can change the various setting to use conveniently

INTRODUCTIONS

Part Name and Function



INTRODUCTIONS

① **FUNC key**

●Press this key with other key or dial to use the function operation.

② **MONI key**

●Hold down this key to open the squelch and monitor.

●Hold down the FUNC key and press this key to lock the keys except POW, FUNC and this keys.

③ **Down key**

●Press this key to decrease the setting value.

●Hold down this key to start the Dual Watch.

●Hold down the FUNC key and press this key to start the Priority Scan.

●Hold down this and FUNC key to store the dual watch channel for the Dual Watch.

④**Up key**

●Press this key to increase the setting value.

●Hold down this key to set the attenuator.

●Hold down the FUNC key and press this key to set the VFO, RADIO or Preset mode.

●Hold down this and FUNC key to store the priority channel for priority scan.

⑤**V/M key**

●Press this key to switch between the VFO and memory mode.

●Hold down this key to assign the skip channel for search or scan.

●Hold down the FUNC key and press this key to memorize the frequency and then giving the memory name.

●Hold down this and FUNC key to erase skip channel.

⑥**Antenna connector**

Fix the supplied antenna or optional antenna.

⑦**Dial Knob**

●Turn this knob to change the frequency or memorized channel.

●Press this knob to switch the volume or tone frequency setting.

●Hold down the FUNC key and turn this knob to change the frequency faster.

⑧**Display**

⑨**SCAN key**

●Press this key to start the search in the VFO mode or the scan in the memory mode.

●Hold down this key to search a concealed microphone transmitter frequency.

●Hold down the FUNC key and press this key to store the frequencies to the limit search operation.

●Hold down this and FUNC key to change the band in the limit search operation.

⑩**MODE key**

●Press this key to switch between the FM, Wide FM, AM and auto mode by each pressing .

●Hold down this key to turn the tone search operation on or off.

●Hold down the FUNC key and press this key to select the tone type.

●Hold down this and FUNC key to set the repeater shift function.

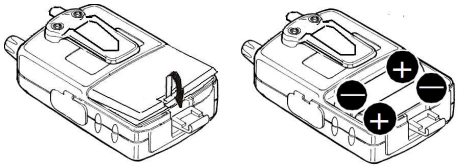
⑪**PWR key**

●Tap this key, no operation is occur.

●Press and hold this key to turn the power on or off.

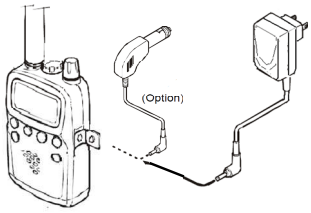
INTRODUCTIONS

⑫ **Battery case**
Remove the battery case lid, and install the supplied Ni-MH battery or AAA battery.



⑬**External DC jack**

●Connected the AA-mini (AC adaptor) or DC-mini (DC adaptor).
And, can be used charging the Ni-MH battery.



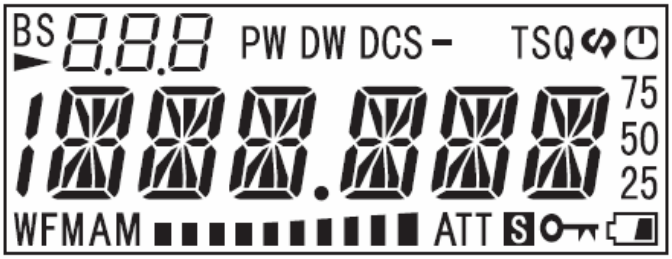
⑭ **Earphone jack**
Remove the earphone jack cover and connect the optional earphone.

⑮ **Battery case lock**
Unlock the this to remove the battery case lid.

INTRODUCTIONS

Descriptions of LCD (Liquid Crystal Display)

Main Display: Frequency, memory name, set mode name or the other various conditions are displayed.



1: When the frequency is 1000 or more in the VFO mode, this segment is appeared.

.: Decimal point

75 50 25: When 6.25 step is set, one of these segments is appeared.

mode: FM, Wide FM, AM or AUTO is appeared in the VFO mode.

S: Signal mater

ATT: When the attenuator is set, this segment is appeared.

SAVE: When the battery save is set, this segment is appeared.

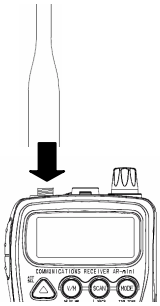
Key Lock: When the key lock is set, this segment is appeared.

Battery: Low battery indicator.

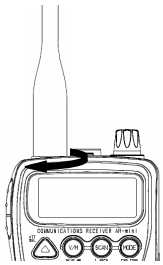
Busy:

Connect the antenna (aerial)

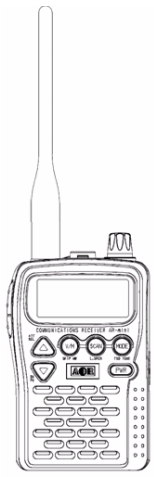
1 Press down firmly the antenna to the antenna connector.



2 Twist the antenna clockwise.



3 Confirm the antenna is fixed to the AR-mini.



4 To remove the antenna, twist the antenna counterclockwise.

Note:
AR-mini has a TNC antenna connector. Never connect other type antenna.

PREPARATIONS AND BASIC USAGE

Install the supplied Ni-MH battery pack or AAA batteries

1 Unlock the battery case lock.

2 Remove the battery lid.

3 Confirm the positive and negative of the battery.

4 Install the battery into the battery case.

5 Attach the battery lid.

6 Lock the battery case lock

Note:
- Never use old battery and new battery at same time.
- Never use different type battery at same time.
- When dispose the battery.

PREPARATIONS AND BASIC USAGE

Charge the supplied Ni-MH battery pack.

1. Turn AR-mini off.
2. Make sure AR-mini contains a supplied Ni-MH battery pack.
3. Remove the external DC jack cover.
4. Insert the AC adapter DC output cable plug into the external DC jack on the right side of the AR-mini.
5. Insert the AC adapter power plug into an AC outlet
6. Make sure the red charging indicator (LED 1) light turns on, indicating that charging has started.
   If the red charging indicator light does not turn on, try inserting the DC output cable plug again.
7. Charging is completed in approximately xx hours. When charging ends, green charging indicators are lit.

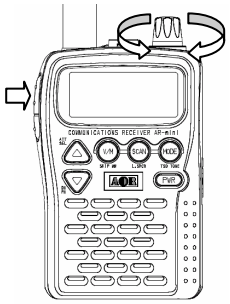
Basic Usage

1. Press and hold the PWR key for two seconds or more to turn AR-mini on.

2. Confirm the VFO mode is appeared in the display.

If memory mode is appeared, press the V/M key to set the VFO mode.

3. Turn the dial knob to match the desired frequency.
   Hold down the FUNC key and turn the dial knob, the frequency is changed by 1 MHz steps.



4. Press the dial knob, and the turn it to adjust the volume.

5 Press the dial knob again, and the turn it to adjust the squelch.

Using the Optional Items

AA-mini
AC Adaptor
Input:100_240V AC
Output:6V DC 500mA

DC-mini
DC Adaptor
Input:12_24V DC
Output:6V DC 500mA

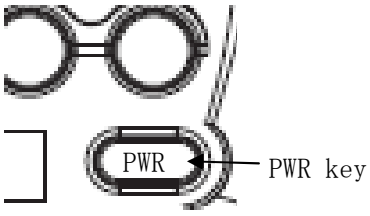
PC-mini
Programming cable
USB_UART Interface

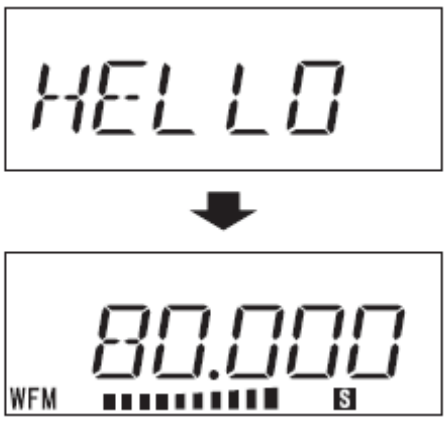
CO-mini
Clone cable

BASIC OPERATION

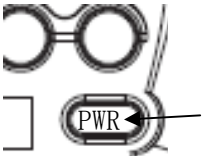
Switching On

1 To turn the power on, press and hold the PWR key for two seconds or more.
Switching on beep is emitted, and the display back light is lit.





2 To turn the power off, press and hold the PWR key for two seconds or more.

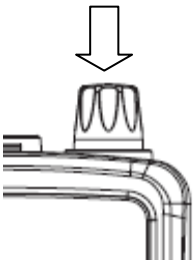


BASIC OPERATION

Adjusting the Volume

1 To adjust the volume, press the dial knob.

Press the knob

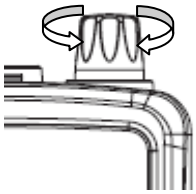


2 To increase the volume, turn the dial knob clockwise.
To decrease the volume, turn the dial knob counterclockwise.

Note:
- Make sure the volume dose not become large. Decrease the volume when using the earphone after using the internal speaker.
- Especially, decrease the volume while driving or walking for safety.

Adjusting the Frequency

1 Confirm the VFO mode is set.



When a memory name is displayed, press the V/M key to switch the mode for the VFO mode.

2 Press the up or down key to set the desired band.
Refer the band table on page xx.

3 To increase the frequency, turn the dial knob clockwise.
To decrease the frequency, turn the dial knob counterclockwise.

4 To change the frequency faster, hold down the FUNC key and turn the dial knob.

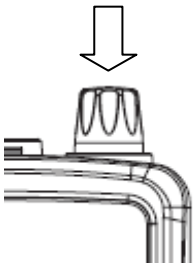
Note:
- Make sure the volume dose not become large. Decrease the volume when using the earphone after using the internal speaker.
- Especially, decrease the volume while driving or walking for safety.

BASIC OPERATION

Adjusting the Squelch

1 To adjust the squelch, press the dial knob twice.

Press the knob twice



2 To adjust the squelch, turn the dial knob clockwise slowly.

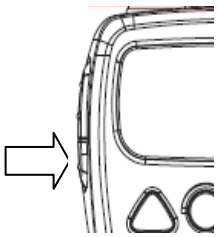
3 Stop the dial when no noise is emitted.
This position is called "Threshold".

4 To cancel the squelch temporally, press and hold the MONI key
The squelch is canceled while holding the MONI key.

Tips:
An weak signal may not be received, when the squelch volume level is set larger.

Monitoring

1 To monitor, press the MONI key.
- Voice may be emitted with noise.
- Even if a tone squelch or DCS is set, it can be canceled by pressing MONI key.
  Refer the tone squelch on page xx and DCS on page xx.



BASIC OPERATION

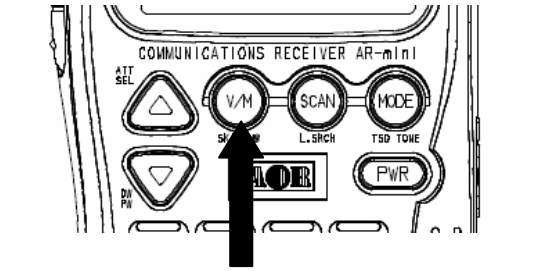
Changing the mode

AR-mini has the following modes to receive the desired frequency conveniently.

VFO mode: This mode is original mode of AR-mini. In this mode, a frequency is set directly by turning the dial knob.

Memory mode; In this mode, a frequency can be stored in the memory with memory name. Recall the memory to receive the desired frequency.

Preset mode: In this mode, some frequency is stored previously as preset number.



VFO⇔Memory

1. To set memory mode from VFO mode, press the V/M key.
2. To return to VFO mode from the memory mode, press the V/M key.
3. To set the preset mode from VFO mode, hold down the FUNC key and press the band up key.
   The modes are switched broadcast radio mode, preset mode and VFO mode.

Tips:
When no memory is stored in step 1, ????? is displayed.

BASIC OPERATION

Finding the Desired Frequency

AR-mini has functions to find the desired frequency as follows;

Priority watch, Dual watch, Search and Memory scan.

Priority Watch

In this function, the frequency which is received on VFO mode is switched the other priority frequency every 5 seconds.

BASIC OPERATION

Dual Watch

Two frequencies are stored in the dual watch memory in VFO mode. Each frequency is watched, and then either frequency is received, the dual watch is paused while receiving.

Search

The search changes the frequency continuously to receive.

There are three methods of searches: VFO search, limit search and limit link search.

BASIC OPERATION

Memory Scan

The memory will be changed, and it looks for the memory that can be received.

Priory Watch

In this function, the frequency which is received on VFO mode is switched the other priority frequency every 5 seconds. This function is available in VFO mode

1. Confirm VFO mode is set.
2. Turn the dial knob to set a frequency to be received as priority frequency.
3. To store the priority frequency into the priority watch memory, hold down the FUNC key and press the band up key for 2 seconds or more.
   "PWM W" is displayed.
4. To return to VFO mode, hold down the FUNC key and press the band down key.
   Priority scan is started.
5. Turn the dial knob to select the frequency to be received.
   The frequency is switched every 5 seconds to priory frequency.
6. To cancel the priority watch press the V/M key or dial knob.

BASIC OPERATION

Dual Watch

Two frequencies are stored in the dual watch memory in VFO mode. Each frequency is watched, and then either frequency is received, the dual watch is paused while receiving.

1 Confirm VFO mode is set.

2 Turn the dial knob to set a frequency to be stored as the dual watch memory A.

3 To store the frequency into the dual watch memory, hold down the FUNC key and press the band down key for 2 seconds or more.
"DWA W" is displayed.

4 Turn the dial knob to set another frequency to be stored as the dual watch memory B.

5 To store the frequency into the dual watch memory, hold down the FUNC key and press the band down key for 2 seconds or more.
"DWB W" is displayed.

6 Press the band down key to start the dual watch.

7 To cancel the priority watch press the V/M key or dial knob.

Dual Watch with Dual Watch Receiving Memory

Dual watch does the frequency of ten sets beforehand.

1 Confirm VFO mode is set.

2 Hold down the FUNC key and press the band down key for 2 seconds or more.

3 Hold down the FUNC key and selected the dual receive memory number by the dial knob.

4 To cancel the priority watch press the V/M key or dial knob.

The default of dual receive memory

Dual receive memory no.	Frequency MHz
A00	10.000
b00	100.00
A01	200.00
b01	300.00
A02	400.00
B02	500.00
A03	600.00
B03	700.00
A04	800.00
B04	900.00
A05	1000.00
B05	1100.00
A06	1200.00
B07	1299.995
A07	145.00
B07	433.00
A08	433.00
B08	1295.00
A--	DW memory A
b--	DW memory B

BASIC OPERATION

VFO Search

VFO search changes the frequency continuously from 0.1 MHz to 1300 MHz.

1. Confirm VFO mode is set.
2. Hold down the FUNC key and press the dial knob to enter the setting mode.
3. Turn the dial knob to set the setting mode number 8.
4. Hold down the FUNC key and turn the dial knob to select VFO.
   VFO is displayed at initial.
5. Confirm the VFO search is started.
6. To cancel VFO search, press the V/M key or dial knob.

Skip the Desired Frequency in the Search

A frequency can be skipped in the search. This prevents to stop search when the frequency that should be canceled is received. The skipped frequencies are stored up to 100.

1. Press the SCAN key to start the search.
2. Hold down the FUNC key and press the V/M key for 2 seconds or more when the search is paused on the frequency to be skipped.
   The skip memory number is displayed.
3. Turn the dial knob to change the skip memory number.
   This step can be skipped, the skip memory number is not changed.
4. To store in the skip memory, hold down the FUNC key and press the V/M key for 2 seconds or more
5. Repeat step 2 to 4, other frequency is stored in skip memory,
   The frequencies can be stored up to 100.

Tips:
In VFO mode, the frequency can be stored in skip memory as same procedure.

BASIC OPERATION

Limit Search

It can be searched in the desired limited range.

1. Confirm VFO mode is set.
2. Hold down the FUNC key and press the dial knob to enter the setting mode.
3. Turn the dial knob to set the setting mode number 8.
4. Hold down the FUNC key and turn the dial knob to select LIMIT.
   VFO is displayed at initial.
5. Press the dial knob.
   The limit search is set
6. To return the VFO, hold down the FUNC key and press the dial knob.
7. Turn the dial knob to set lower frequency of limit range.
8. Hold down the FUNC key and press the SCAN key.
   "SCHA W" is displayed and returns VFO mode.
9. Turn the dial knob to set upper frequency of limit range.
10. Hold down the FUNC key and press the SCAN key for 2 seconds or more.
    "SCHB W" is displayed and returns VFO mode.
11. To start the limit search, press the SCAN key.
12. To cancel VFO search, press the V/M key or dial knob.

Limit Link Search

It can be linked limit search to change the limit range easily.

1. Confirm VFO mode is set.
2. Hold down the FUNC key and press the dial knob to enter the setting mode.
3. Turn the dial knob to set the setting mode number 8.
4. Hold down the FUNC key and turn the dial knob to select LTLNK.
   VFO is displayed at initial.
5. Press the dial knob.
6. Turn the dial knob to set the setting mode number 10.
7. Hold down the FUNC key and turn the dial knob to select limit search number to be linked.
8. Press the dial knob to set.
9. Hold down the FUNC key and turn the dial knob to select limit search number to be linked.
10. Press the dial knob to set.
11. To return VFO mode, hold down the FUNC key and press the dial knob.
12. To start the limit link search, press the SCAN key
13. To stop the limit link search, press the SCAN key

BASIC OPERATION

Memory mode

A frequency can be stored in the memory up to 1000. Every 100 memories are combined as a memory bank. Refer to following table which the relation of the memory number and memory bank.

The memory can be stored with memory name, tone squelch or other status.

The memory is used for memory scan.

Insert the table relation of the memory and memory bank

Storing a Frequency in the Memory

1. Confirm VFO mode is set.
2. Turn the dial knob to set the frequency to be stored in memory.
3. Hold down the FUNC key and press V/M key.
   The memory number is blinking.
4. Turn the dial knob to change the memory number.
   When memory number is not need to change, skip this step.
5. To store, hold down the FUNC key and press V/M key.

Tips:
In step 3, press the only V/M key to cancel and return the memory mode.

BASIC OPERATION

Recalling the Memory

1. Confirm VFO mode is set.
2. Press the V/M key to set memory mode.
3. Press the band up / down key or turn the dial knob to recall the desired memory.
4. To return the original VFO mode, press the V/M key.
   To return the VFO mode with displayed memory frequency, press the band up and down key simultaneously

Erasing a Memory

1. Confirm the memory mode is set.
2. Turn the dial knob to recall the desired memory to be erased.
3. Hold down the FUNC key and press the V/M key.
   CLEAR is displayed.
4. To erase the memory, hold down the FUNC key and press the V/M key.
   The memory is erased and return memory mode.

Tips:
In step 3, press the only V/M key to cancel and return the memory mode.

Erasing All Memories in the Memory Bank

All memories which are in the same memory bank are erased at once.

1. Confirm the memory mode is set.
2. Hold down the FUNC key and press the dial knob to enter the setting mode.
3. Turn the dial knob to set the setting mode number 13.
4. Hold down the FUNC key and turn the dial knob to select bank number to be erased.
5. Hold down the FUNC key and press the V/M key.
   - The memories which are stored in a same memory bank are erased, and then next memory bank number is displayed.
   - If cancel this procedure, press the V/M key to exit.
6. Repeat from the step 4, when other memories are erased.
7. To return the memory mode, hold down the FUNC key and press the dial knob.

Naming the Memory

All memories can be add the name

1. To set memory mode from VFO mode, press the V/M key.
2. Hold down the FUNC key and press the SCAN key to writing mode.
3. Selected the words by dial knob.
4. Hold down the FUNC key and turned the dial knob to change digit.
5. Hold down the FUNC key and press the V/M key to enter the write.

BASIC OPERATION

The Memory Scanning

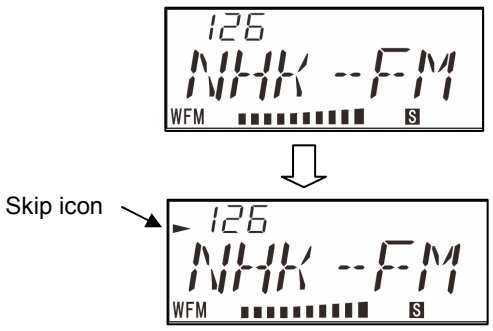
All memories can be scanned.

1. Confirm VFO mode is set.
2. Hold down the FUNC key and press the dial knob to enter the setting mode.
3. Turn the dial knob to set the setting mode number 9.
4. Hold down the FUNC key and turn the dial knob to select ALL.
5. Press the dial knob.
6. To return original VFO, hold down the FUNC key and press the dial knob.
7. Press the V/M key to enter the memory mode.
8. Press the SCAN key to start the memory scan.
9. To return the memory mode, press the V/M key.

Setting the Skip Memory in the Scanning

Can be skip the memory in the scanning

1. To set memory mode from VFO mode, press the V/M key.
2. Selected the memory channel to skip.
3. Press and hold the V/M key for 2 seconds.
4. Memory skip icon is displayed
5. Repress and hold the V/M key for 2second to cancelled.



BASIC OPERATION

Scanning the Memory Bank

Can be scan the memory in a bank.

1. Hold down the FUNC key and press the dial knob to set mode and selected the s09.
2. Selected the BANK by the dial knob.
3. Press the dial knob and returned to VFO mode.
4. Press the V/M key, and press the SCAN key to scanning the Memory bank mode.
5. When change the bank, use the dial knob.
6. Press the V/M key, while to scan stop and return the memory mode.
7. Press the V/M key again, return to VFO mode.

Scanning the Memory Bank Link

Can be scan the memory in few banks.
Can be selected banks at 10 maxim

1. Hold down the FUNC key and press the dial knob to set mode and selected the s09.
2. Selected the BKLNK by the dial knob.
3. Hold down the FUNC key and selected the dial knob to bank number.
   If you release the FUNC key, can not be change the bank number.
4. After release the FUNC key to set the bank link.
5. Repeat step 3 to 4 other bank number.

BASIC OPERATION

Setting the Preset mode

This setting used to preset mode.

1. Hold down the FUNC key and press the BAND UP key to watch select function.
2. Select the preset mode by the dial knob.
3. The P icon and memory number are displayed.
4. select the band of the preset memory by BAND UP key or BAND DOWN key

Using the Tone Squelch

This setting uses to the tone squelch

1. Confirm VFO mode is set.
2. Hold down the FUNC key and press the MODE key and select the TSQ.
3. Press the V/M key or press the dial knob to TSQ mode.
4. Hold down the FUNC key and press the dial knob to set mode.
5. Selected the s20 by the dial knob.
6. Hold down the FUNC key and selected the dial knob to tone frequency
7. Hold down the FUNC key and press the dial knob to VFO mode.

SETTING MODE

Changing the Fast Step

This setting uses to change the fast step. The fast step is available by holding down the FUNC key and turning the dial.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 2.
3. Hold down the FUNC key and turn the dial knob to select AUTO, ON or OFF.
   - When AUTO is selected, the lamp is turned off 5 seconds after the key operation.
   - When ON is selected, the lamp is turned on continuously.
   - When OFF is selected, the lamp is turned off even if the key is operated.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
We recommended that select AUTO to prevent battery consumed.

Setting the Lamp

This setting uses to set the time when the lamp is lit.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 2.
3. Hold down the FUNC key and turn the dial knob to select AUTO, ON or OFF.
   - When AUTO is selected, the lamp is turned off 5 seconds after the key operation.
   - When ON is selected, the lamp is turned on continuously.
   - When OFF is selected, the lamp is turned off even if the key is operated.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
We recommended that select AUTO to prevent battery consumed.

SETTING MODE

Setting the Timer

This setting uses to set alarm time or power off time.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 3.
3. Hold down the FUNC key and turn the dial knob to set.
   Refer to following table for details.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
(Table — Display & Setting).

Setting the S-meter Sensitivity

This setting uses to reduce the S-meter sensitivity.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 4.
3. Hold down the FUNC key and turn the dial knob to set LOW.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This setting is useful to search a concealed microphone transmitter frequency with S-meter buzzer function.

SETTING MODE

Setting the S-meter Buzzer

This setting uses to emit the beep sound as the S-meter's value.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 5.
3. Hold down the FUNC key and turn the dial knob to set SMBUZ.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This setting is useful to search a concealed microphone transmitter frequency with S-meter sensitivity function.

SETTING MODE

Setting the Resume Time

This setting uses to set resume time for search or scan.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 7.
3. Hold down the FUNC key and turn the dial knob to set the resume time. The resume time can be set 1 to 12 seconds.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This setting is effective to the search, scan, priority watch and dual watch.

Setting the Search

This setting uses to switch the search method.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 8.
3. Hold down the FUNC key and turn the dial knob to select the search method.
   - Select VFO to search 0.1 MHz to 1300 MHz.
   - Select LIMIT to search the limited range.
   - Select LTLNK to search in a linked limited range.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

SETTING MODE

Setting the Memory Scan

This setting uses to switch the memory scan method.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 9.
3. Hold down the FUNC key and turn the dial knob to select the memory scan method.
   - Select ALL to scan all memories.
   - Select BANK to scan all memories in a bank memory.
   - Select BKLNK to scan all memories in a linked bank memories.
4. Press the dial knob.
5. To return the original display, hold down the FUNC key and press the dial knob.

Setting the Limit Link Search

This setting uses to link the limit search.

1. A limit search is displayed to be linked to other limit search.
2. Hold down the FUNC key and press the dial knob to select the setting mode.
3. Turn the dial knob to set the setting mode number 10.
4. Hold down the FUNC key and turn the dial knob to select the limit link number to be linked for the limit link which is displayed in step 1.
   Setting number is replaced by a search band memory number.
5. Press the dial knob.
   The search link mark is displayed.
6. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
When the link limit search is canceled, repeat step 1 to 4 and select the link limit search number to be canceled. And then, press the dial knob.

SETTING MODE

Setting the Memory for the Memory Bank Link Scan

This setting uses to set the memory banks are linked for the scan.

1. A memory bank is displayed to be linked to other memory bank.
2. Hold down the FUNC key and press the dial knob to select the setting mode.
3. Turn the dial knob to set the setting mode number 11.
4. Hold down the FUNC key and turn the dial knob to select the memory bank number to be linked for the memory bank which is displayed in step 1.
5. Press the dial knob.
   The bank link mark is displayed.
6. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
When the memory back link is canceled, repeat step 1 to 4 and select the memory bank number to be canceled. And then, press the dial knob.

Confirming the Limit Search Frequencies

This setting uses to confirm the frequencies which is set limit search. The upper frequency and lower frequency alternately displayed every one second.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 12.
3. Hold down the FUNC key and turn the dial knob to confirm.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
- In Step 3, the pair of limit search frequencies is confirmed up to 2420.
- This procedure is only confirming. The setting can not be changed.

Erasing the All Memories in a Memory Bank

This setting uses to erase the all memories in a memory bank. The memories can be stored one memory bank of memory banks.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 13.
3. Hold down the FUNC key and turn the dial knob to select bank number to be erased.
4. Press the dial knob.
   - The memories which are stored in memory bank are erased, and then next memory bank number is displayed.
   - If cancel this procedure, press the V/M key to exit.
5. Repeat from the step 3, when other memories are erased.
6. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
In Step 3, the memory bank which stores no memory is not displayed.

Erasing the VFO Skip Memory

This setting uses to erase the VFO skip memory. The VFO skip memory is stored to skip the stored frequencies during search.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 14.
3. Hold down the FUNC key and turn the dial knob to set CLEAR.
4. Press the dial knob.
   - The VFO skip memories are erased.
   - If cancel this procedure, press the V/M key to exit.
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
In Step 3, no VFO skip memory is stored, CLEAR is not displayed.

SETTING MODE

Erasing the Skip Mark of the Memory Channel

This setting uses to erase the skip mark of the memory channel. The skip mark is stored to skip the marked channels in the scan function.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 15.
3. Hold down the FUNC key and turn the dial knob to set CLEAR.
4. Press the dial knob.
   The skip memories are erased
5. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
In Step 3, no skip memory is stored, CLEAR is not displayed.

Canceling the Muting in Scan

In normal setting, the voice is muted during scan or search. This setting uses to cancel the muting.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 16.
3. Hold down the FUNC key and turn the dial knob to set OFF.
   When select OFF, the muting is canceled.
4. To return the original display, hold down the FUNC key and press the dial knob.

SETTING MODE

Selecting the Connected Antenna type

This setting uses to match the connected antenna type.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 17.
3. Hold down the FUNC key and turn the dial knob to set BAR or EXT.
   - When AM or HF bar antenna is connected, select BAR.
   - When other antenna is connected, select EXT.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
If antenna type is not matched, the receiving sensitivity is going to reduce.

Using the Earphone as the Antenna

This setting uses the earphone as antenna. This setting is available for all band of this receiver.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 18.
3. Hold down the FUNC key and turn the dial knob to set EARANT.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
When this setting is set, an earphone should be connected on the receiver always. If no earphone is connected, the receiving sensitivity is going to reduce.

SETTING MODE

Lauding the Volume Automatically

This setting uses to laud the volume at 6 dB automatically in narrow band.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 19.
3. Hold down the FUNC key and turn the dial knob to set ON.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This setting is available in narrow band only.

Setting the Tone Frequency

This setting uses to set the tone frequency. The tone frequencies are prepared 50 signals.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 20.
3. Hold down the FUNC key and turn the dial knob to select the tone frequency.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The tone frequencies are prepared as following table;

- **Available subaudible tone frequencies**

67.0	79.7	94.8	110.9	131.8	156.7	171.3	186.2	203.5	229.1
69.3	82.5	97.4	114.8	136.5	159.8	173.8	189.9	206.5	233.6
71.9	85.4	100.0	118.8	141.3	162.2	177.3	192.8	210.7	241.8
74.4	88.5	103.5	123.0	146.2	165.5	179.9	196.6	218.1	250.3
77.0	91.5	107.2	127.3	151.4	167.9	183.5	199.5	225.7	254.1

SETTING MODE

Setting the Tone Frequency

This setting uses to set the tone frequency. The tone frequencies are prepared 50 signals.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 20.
3. Hold down the FUNC key and turn the dial knob to select the tone frequency.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The tone frequencies are prepared as following table;

(Table — tone frequencies)

Selecting the Reversed Tone Frequency

This setting uses to select the reversed tone frequency.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 21.
3. Hold down the FUNC key and turn the dial knob to select the tone frequency to be reversed.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The reversed tone frequencies are prepared as following table;

SETTING MODE

Selecting the Carrier Frequency of the Scramble

This setting uses to select the carrier frequency of the scramble communications. The carrier frequency can be selected to hear clearly. The carrier frequency is prepared 16 signals.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 23.
3. Hold down the FUNC key and turn the dial knob to select the carrier frequency.
   The carrier frequency can be set as following table.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The table of the carrier frequency

Switching the Display Automatically

This setting uses to switch the display from the volume or squelch display to the frequency display automatically when the setting time is passed.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 24.
3. Hold down the FUNC key and turn the dial knob to select the setting time to be changed.
   The setting time can be set as follows; 0.5 sec., 1 sec., 2 sec, 3 sec, 4 sec. and OFF
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
In step 3, OFF is selected, the display is not changed automatically.

SETTING MODE

Setting the DCS code

This setting uses to set the DCS code. The DCS codes are prepared 104 codes.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 25.
3. Hold down the FUNC key and turn the dial knob to select the DCS code.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The DCS codes are prepared as following table;

Reversing the Phase of DCS code

This setting uses to reverse the phase of the DCS code which is set.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 26.
3. Hold down the FUNC key and turn the dial knob to set the phase.
   - When NORMAL is selected, a phase of the DCS code is not reversed.
   - When REV is selected, a phase f the DCS code is reversed.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This function has no icon, therefore the setting status is confirmed in setting mode.

• Available DCS code

023	054	125	165	245	274	356	445	506	627	732
025	065	131	172	246	306	364	446	516	631	734
026	071	132	174	251	311	365	452	523	632	743
031	072	134	205	252	315	371	454	526	654	754
032	073	143	212	255	325	411	455	532	662	
036	074	145	223	261	331	412	462	546	664	
043	114	152	225	263	332	413	464	565	703	
047	115	155	226	265	343	423	465	606	712	
051	116	156	243	266	346	431	466	612	723	
053	122	162	244	271	351	432	503	624	731	

SETTING MODE

Turing the Beep Off

This setting uses to turn off the beep.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 28.
3. Hold down the FUNC key and turn the dial knob to set OFF.
4. To return the original display, hold down the FUNC key and press the dial knob.

Changing the Battery Saving Time

This setting uses to change the battery saving time.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 29.
3. Hold down the FUNC key and turn the dial knob to set the desired time.
   The Battery save time can be selected as followings;
   1 second, 3 seconds, 5 seconds, 7 seconds, 9 seconds and OFF
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
In step 3, When OFF is selected, the battery save function is canceled.

SETTING MODE

Displaying the Battery Voltage

This setting uses to display the battery voltage.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 29.
3. Hold down the FUNC key and dial knob to display the voltage.
4. To return the original display, hold down the FUNC key and press the dial knob.

SETTING MODE

Charging the Ni-MH Battery

This setting is available for only specific optional battery. Never use this setting for other batteries.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 30.
3. Hold down the FUNC key and turn the dial knob to set CHARG.
4. To return the original display, hold down the FUNC key and press the dial knob.
5. To charge the battery, turn the power off by pressing the PWR key for two seconds or more.
6. Connect the AC adapter AA-mini or DC adapter DC-mini.
   - Refer to page xx,xx to connect the AA-mini or DC-mini
   - "CHARG" is displayed and "" is blinking.

Tips:
The charging is turned off for 14 hours automatically for safety.

Setting the Shift Lower Frequency in Repeater Band

This setting uses to shift the lower frequency at receiving the repeater by one touch.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 31.
3. Hold down the FUNC key and turn the dial knob to set RPT.
4. To return the original display, hold down the FUNC key and press the dial knob.
5. Set the Amateur radio's repeater band.
   "-" is displayed.
6. To shift lower frequency, hold down the FUNC key and press the MODE key for two seconds or more.
   "-" is blinking.

Tips:
In simplex mode band, "-" is blinking while this setting is set.

SETTING MODE

Revising the Step Frequency

This receiver can revise the step frequency to match the channel plan at automatically. This setting uses to cancel this setting.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 32.
3. Hold down the FUNC key and turn the dial knob to set OFF.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
The step frequency is not revised automatically while this setting is set OFF except 6.25 Hz and 12.5 Hz step.

Shifting the Microprocessor's Clock Rate

This setting uses to avoid the influence by the microprocessor's clock rate.

1. Hold down the FUNC key and press the dial knob to enter the setting mode.
2. Turn the dial knob to set the setting mode number 33.
3. Hold down the FUNC key and turn the dial knob to set ON.
4. To return the original display, hold down the FUNC key and press the dial knob.

Tips:
This setting is canceled by changing the channel or truing the power off.

SPECIFICATIONS

◆GENERAL

・Frequency coverage	100kHz ～821.995MHz 851.00MHz ～866.995MHz 896.00MHz ～1299.995MHz
・Modulation	FM、WFM、AM
・Antenna impedance	50Ω unbalanced
・Antenna connector	SMA type
・Frequency resolution	5kHz、6.25kHz、*8.33kHz、*9kHz、10kHz、12.5kHz、15kHz、20kHz、25kHz、30kHz、50kHz、100kHz *Selectable depending on the operating frequency band.
・Operating temperature range	-10℃ ～ +50℃
・Reference frequency stability	±2.5ppm (-10℃～+50℃)
・Power supply requirement	2AA (R6) alkaline cells 2AA (R6) Ni-MH or Ni-Cd cells 6.0V DC±5% (with AA-mini or DC-mini)
・Current drain (at 3.0V DC)	approx. 20mA typical (power saved) approx. 170mA typical (maximum audio) approx. 150mA typical (charging at 6.0V DC)
・Dimensions	60(W) X 95 (H) X 24(D)mm
・Weight (approx.)	150g; 5.3oz

◆RECEIVER

・Receiver system		Triple conversion superheterodyne (FM, AM) Double superheterodyne (WFM)	
・Intermediate frequency		1st: 243.95 MHz 2nd: 21.7 MHz (FM, AM) 10.7 MHz (WFM) 3rd: 450 kHz (FM, AM)	
・Sensitivity	FM	(1kHz/3.5kHz dev.: 12dB SINAD)	
		5 ～ 160MHz	0.2uV typ.
		160 ～ 370MHz	0.2uV typ.
		370 ～ 520MHz	0.28uV typ.
		520 ～ 1300MHz	0.35uV typ.
	WFM	(1kHz/22.5kHz dev.: 12dB SINAD)	
		5 ～ 160MHz	0.9uV typ.
		160 ～ 370MHz	0.8uV typ.
		370 ～ 520MHz	1.0uV typ.
		520 ～ 1300MHz	1.0uV typ.
	AM	(1kHz/30% MOD.: 10dB S/N)	
		0.2 ～ 5MHz	1.3uV typ.
		5 ～ 160MHz	0.6uV typ.
		160 ～ 370MHz	0.6uV typ
		370 ～ 520MHz	0.6uV typ
		520 ～ 1300MHz	0.7uV typ.
・Selectivity	AM/FM	More than 15kHz/-9dB Less than 30kHz/-60dB	
	WFM	More than 110kHz/-6dB	
・AF output power		More than 100mW (Internal speaker)	
・Earphone jack		3-connector 3.5(d)mm	

Authority On Radio communications

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Prinred in JAPAN
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